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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/682,269	10/09/2003	Dun-Nian Yaung	252016-2750	8272

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EXAMINER	
MOVVA, AMAR	
ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 10/682,269	**Applicant(s)** YAUNG ET AL.	
	Examiner AMAR MOVVA	**Art Unit** 2894	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _01 January 2009_.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _14-17,19 and 20_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _14-17,19 and 20_ is/are rejected.

7)☒ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 14-17 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA (admitted prior art) in view of Chen '263.

a. APA discloses a CMOS image sensor device comprising: shallow trench isolation regions (18, fig. 2) in a semiconductor substrate (10, fig. 2), said shallow trench isolation regions separate said device; a sensor diode (photodiode, fig. 2) in said semiconductor substrate comprising a first terminal (16, fig. 2) and a second terminal (10, fig. 2); a plurality of gates (66, fig. 2) for transistors in said CMOS image sensor wherein said gates comprise a conductor layer (26, fig. 2) overlying said semiconductor substrate with an insulating layer (22, fig. 2) therebetween and wherein said transistors include reset transistors (66, fig. 2); source/drain regions (38, fig. 2) in contact with the shallow trench isolation for said transistors wherein said source regions of said reset transistors are formed in said first terminals of said sensor diodes (38 in photodiode, fig. 2). Said sensor diodes first terminals comprise n-type, said source/drain regions comprise n-type (fig. 2). Lightly doped drain extensions (30, fig. 2) are aligned to said gates; and sidewall spacers (34, fig. 2) on said gates wherein said source/drain regions are aligned to said sidewall spacers. Said second sensor diode terminal is coupled to ground and wherein said reset transistor drain is coupled to a power supply (fig. 1,2). Said transistors further include source follower transistors having gates coupled to said reset transistor sources (fig. 1,2). APA, however, does not expressly disclose n-type double diffused sources only in said reset transistor sources totally overlapping said reset transistor sources and contacting the isolation regions. Said double diffused sources have a thicker thickness than said source/drain regions.

b. Chen discloses a CMOS imager wherein n-type double diffused sources (305, fig. 3) only in said reset transistor sources (RS, fig. 3) totally overlapping than said reset transistor sources (307, fig. 3) and contacting the shallow trench isolation regions (fig. 3).

c. It would have been obvious to one of ordinary skill in the art at the time of the invention to have used Chen's double diffused sources with APA's reset transistor sources.

d. The motivation to do so would have been to improve quality of the sensor by reducing leakage current (lines 5-15, col. 3 of Chen).

Please Note: Claim 15 contains process limitations regarding the formation of the double diffused source. These limitations invoke the Product-by-Process doctrine. Product-by-process limitations are not limited by the manipulations of the recited steps, only the structure implied by the steps (MPEP 2113). Specifically using the implantation method in the claim does not appear to structurally distinguish the invention over the resulting structure produced by the prior art. The burden to show that the claimed method necessarily distinguishes over the prior art is on the applicant.

Response to Arguments

Applicant's arguments have been fully considered but they are not persuasive.

a. Applicant argues the first terminal is not lower than the DDS. The first terminal is defined as (16, fig. 2) which is a needed element in p-n junction of the sensor the DDS contacting the STI would be formed in this NW in order to reduce leakage current.

b. Applicant argues that Chen does not disclose a DDS since Chen does not teach a asymmetric source/drain structure and teaches away since it is not using a DDS. Chen discloses a doping region (305) (DDS) which completely overlaps the source (307), it is asymmetric due the presence of the overlapping doping region (305) which is not present on the drain 323. Element 305 is a DDS by the very nature that it diffuses over the source 307, hence a “double” diffused source.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMAR MOVVA whose telephone number is (571)272-9009. The examiner can normally be reached on 7:30 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly Nguyen can be reached on 571-272-2402. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Amar Movva
Examiner
Art Unit 2894

Am

/Bradley K Smith/
Primary Examiner, Art Unit 2894